

Claims

[1] A speed change controller provided on a saddle-ride type vehicle and comprising

a detection mechanism that detects operation by a driver for speed change, and

a speed change mechanism that performs speed change on the basis of speed change operation detected by the detection mechanism, and

wherein the detection mechanism comprises an operation part including a moving part, which moves relative to the vehicle on the basis of manipulation by a foot, and

a detection unit that detects that the moving part moves a predetermined amount or more.

[2] The speed change controller according to claim 1, wherein the operation part comprises the moving part, a shift pedal directly manipulated by a foot, and a link member that connects between the pedal and the moving part.

[3] The speed change controller according to claim 2, wherein one end of the link member is constructed to be connectable to the moving part and attachable to an arm member provided on a shift shaft of the speed change mechanism.

[4] The speed change controller according to claim 2, wherein the moving part comprises a lever member provided to be able to turn, and

one end of the link member is constructed to be

connectable to the lever member and attachable to an arm member provided on a shift shaft of the speed change mechanism.

[5] The speed change controller according to claim 1, wherein the moving part is supported to be able to swing in two different vertical directions, and

the detection unit detects a direction, in which the moving part swings, and discriminates between shift-up and shift-down by the direction.

[6] The speed change controller for saddle-ride type vehicles, according to claim 1, wherein the detection unit comprises a rotation sensor that detects that the moving part moves a predetermined angle about a predetermined rotating shaft.

[7] The speed change controller for saddle-ride type vehicles, according to claim 1, wherein the detection unit comprises at least one sensor to respective different directions, the sensors detecting that the moving part swings a predetermined amount or more in the different directions from a predetermined reference position.

[8] The speed change controller according to any one of claims 1 to 7, wherein the detection mechanism comprises a base that supports at least the moving part and the detection unit, and

the base is provided detachably on the vehicle.

[9] The speed change controller according to any one of

claims 1 to 7, wherein the moving part is constructed to be movable by manipulation by a foot in two different directions with a predetermined neutral position therebetween, and

the operation part comprises a return mechanism that automatically returns the moving part, which moves in either of the directions by manipulation by a foot, to the neutral position.

[10] The speed change controller according to claim 9, wherein the detection mechanism comprises a base that supports at least the moving part, the detection unit, and the return mechanism, and

the base is provided detachably on the vehicle.

[11] The speed change controller according to any one of claims 1 to 7, wherein the moving part is constructed to be movable by manipulation by a foot in two different directions with a predetermined neutral position therebetween, and

the operation part comprises a stopper that restricts a moving range of the moving part, which moves in either of the directions by manipulation by a foot.

[12] The speed change controller according to claim 11, wherein the detection mechanism comprises a base that supports at least the moving part, the detection unit, and the stopper, and

the base is provided detachably on the vehicle.

[13] The speed change controller according to any one of

claims 1 to 7, wherein the detection mechanism comprises an operating force changing mechanism that changes torque required for operative movement of the moving part, and

the operating force changing mechanism changes torque required for movement of the moving part when or after the detection unit detects that the moving part moves a predetermined amount or more.

[14] The speed change controller according to claim 8, wherein the detection mechanism comprises an operating force changing mechanism that changes torque required for operative movement of the moving part, the operating force changing mechanism being provided on the base, and

the operating force changing mechanism changes torque required for movement of the moving part when or after the detection unit detects that the moving part moves a predetermined amount or more.

[15] The speed change controller according to claim 13, wherein the operating force changing mechanism comprises a resistance portion, at least a part of which is deformable by elasticity, and an abutment formed in a position, in which it can contact with the resistance portion through at least manipulation by a foot immediately before the moving part can be detected by the detection unit, and

when the moving part moves through manipulation by a foot immediately before it can be detected by the detection unit,

at least a part of the resistance portion is pushed by the abutment whereby an increase in the torque is realized, and the abutment is formed so that push against the resistance portion by the abutment is released or the push force is decreased when the moving part moves a predetermined amount, which can be detected by the detection unit.

[16] The speed change controller according to claim 15, wherein the resistance portion comprises a surface portion in contact with the abutment and a spring portion connected to the surface portion, and

the abutment comprises a convex portion that pushes the surface portion when the moving part moves through manipulation by a foot immediately before it can be detected by the detection unit.

[17] The speed change controller according to claim 15, wherein either of the resistance portion and the abutment is attached to the moving part, and

the resistance portion or the abutment moves together with the moving part.

[18] A speed change controller provided on a saddle-ride type vehicle and comprising

a detection mechanism that detects operation by a driver for speed change, and

a speed change mechanism that performs speed change on the basis of speed change operation detected by the detection

mechanism, and

wherein the detection mechanism comprises an operation part including a loaded part, on which a load is applied by manipulation by a foot, and

a detection unit that detects the load applied on the operation part.

[19] The speed change controller according to claim 18, wherein the detection mechanism comprises a base that supports the loaded part and the detection unit, and

the base is provided detachably on the vehicle.

[20] The speed change controller according to any one of claims 1 to 7 and 18, wherein the detection mechanism is supported on a vehicle body frame, which constitutes the saddle-ride type vehicle.

[21] The speed change controller according to any one of claims 1 to 7 and 18, wherein the operation part comprises a variable mechanism that can change that portion, which is directly manipulated by a foot, in a position relative to the vehicle.

[22] A saddle-ride type vehicle comprising the speed change controller according to any one of claims 1 to 7 and 18.

[23] A saddle-ride type vehicle comprising the speed change controller according to claim 8.

[24] A saddle-ride type vehicle comprising the speed change controller according to claim 13.